

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 30 May 2001 (30.05.01)	
International application No. PCT/CA00/01063	Applicant's or agent's file reference 50412-1 PCT
International filing date (day/month/year) 22 September 2000 (22.09.00)	Priority date (day/month/year) 22 September 1999 (22.09.99)
Applicant EDWARDS, Eric, C.	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
19 April 2001 (19.04.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Nestor Santesso Telephone No.: (41-22) 338.83.38
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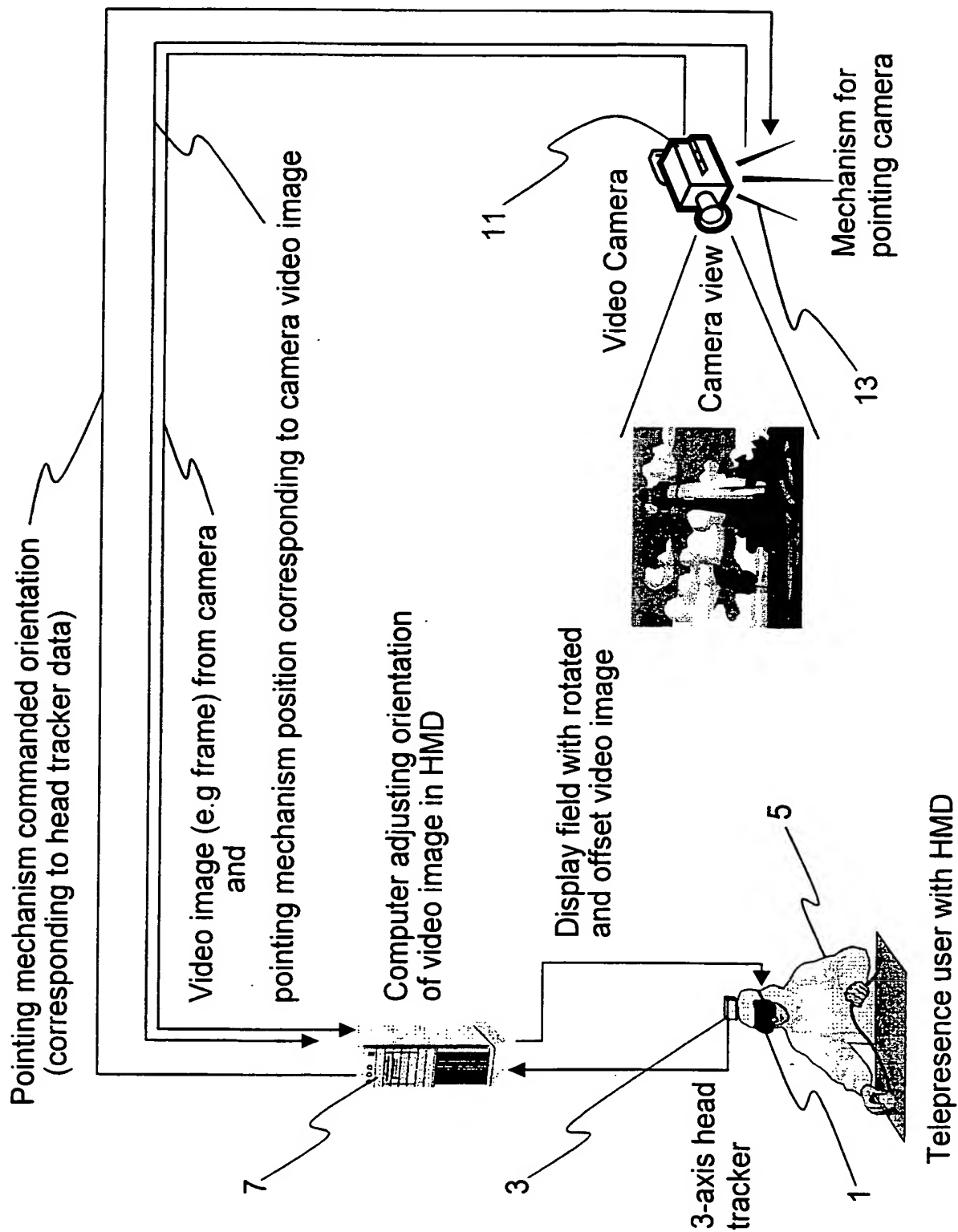


Fig. 1

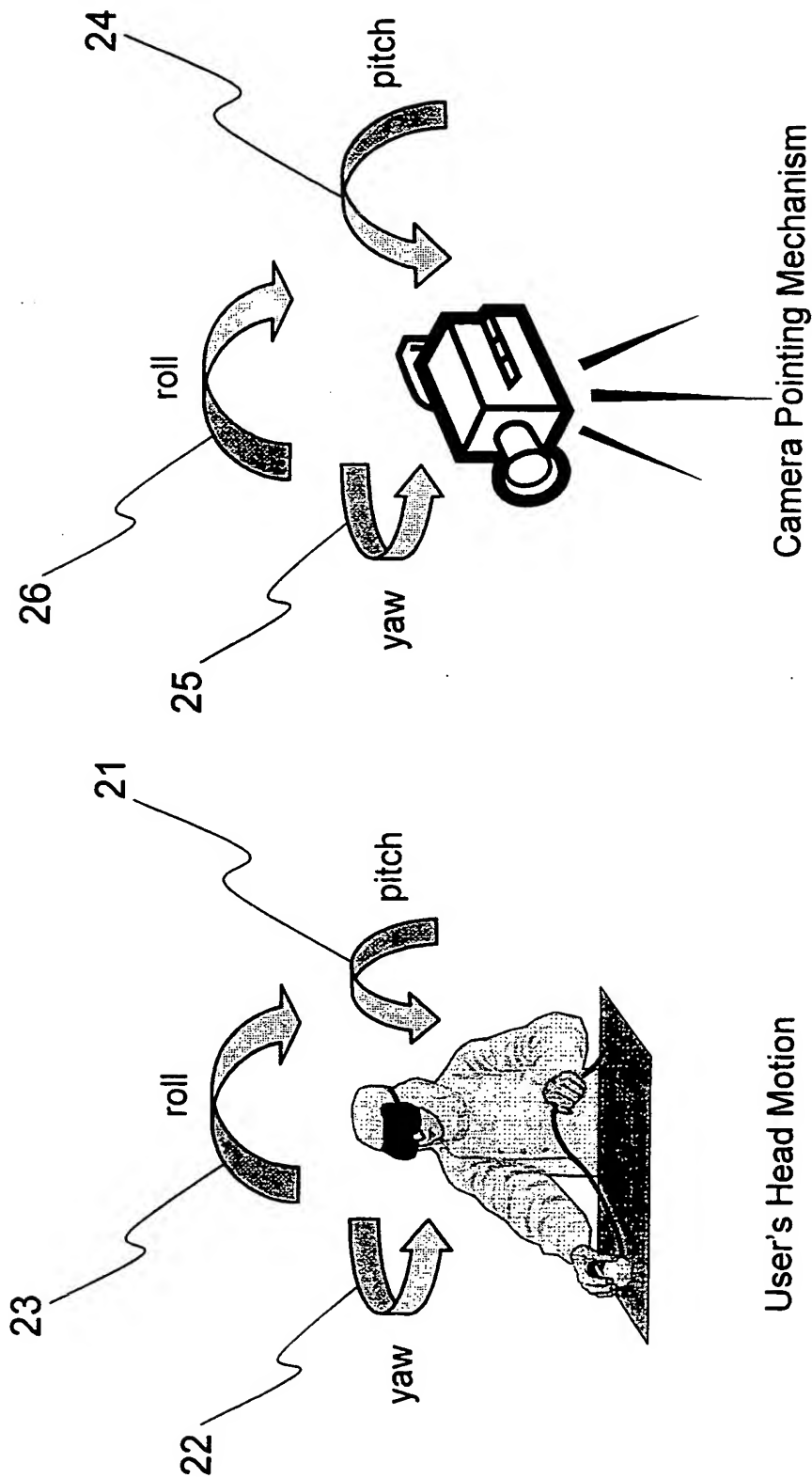
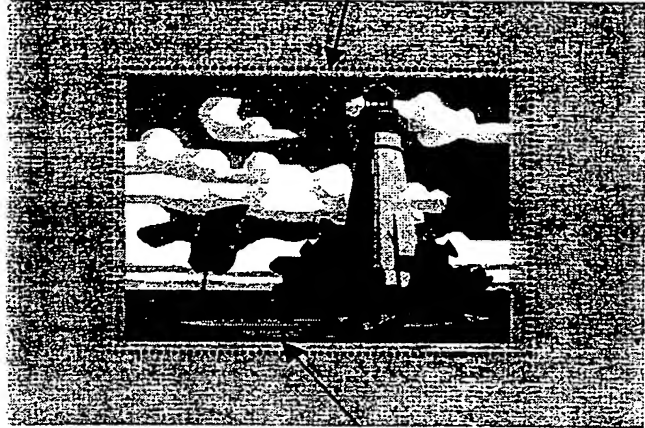


Fig. 2

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HMD's Field of View(dashed line)

Fig. 3a

Nominal display
of image

Camera's Field of View (edge of image)

Fig. 3b

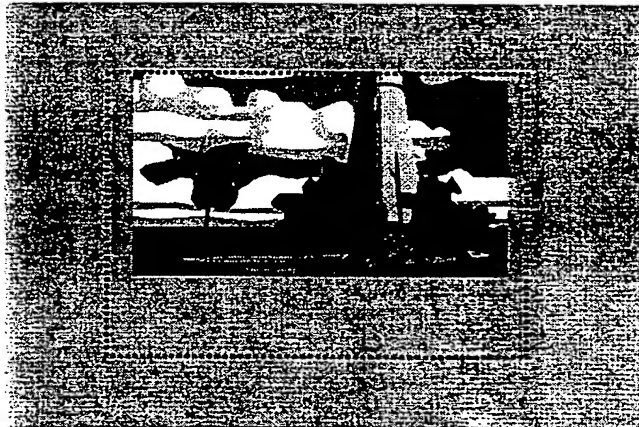
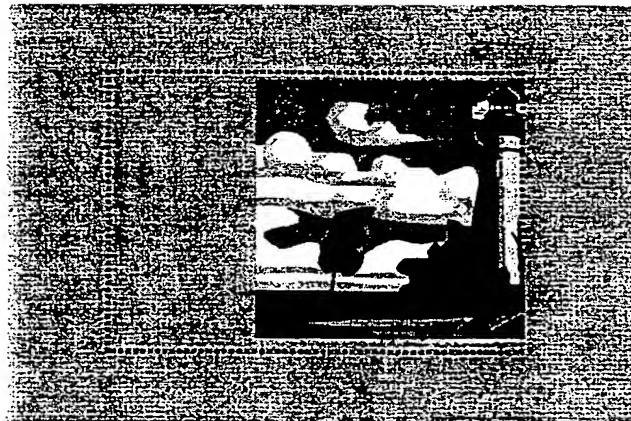
Vertical Offset
of Image

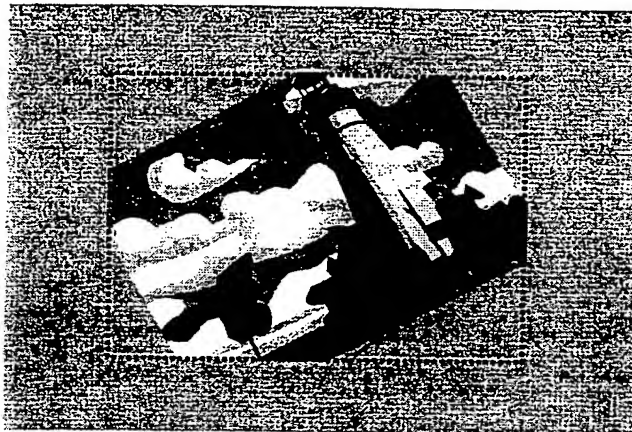
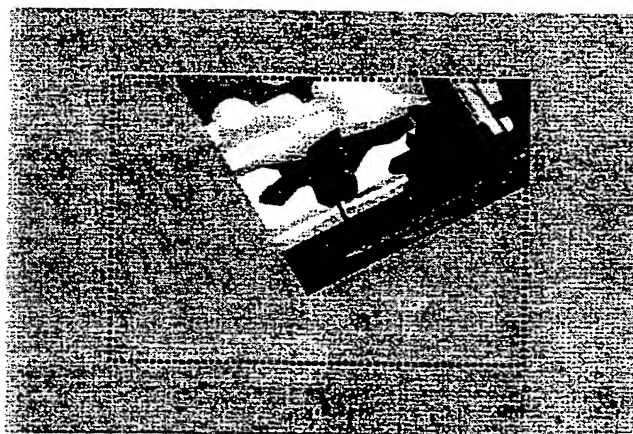
Fig. 3c

Horizontal Offset
of Image

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Fig. 3d

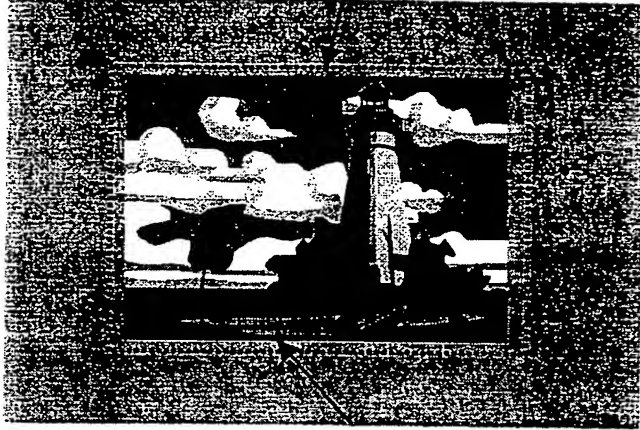
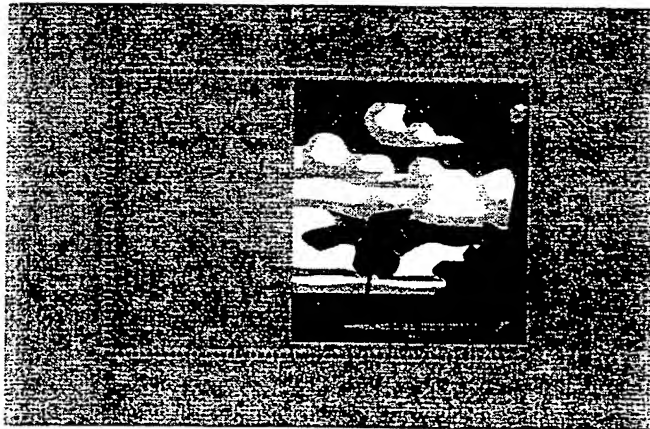
Rotation of Image

**Fig. 3e**Vertical and Horizontal
Offsets in Addition to
Rotation of Image

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Fig. 4a

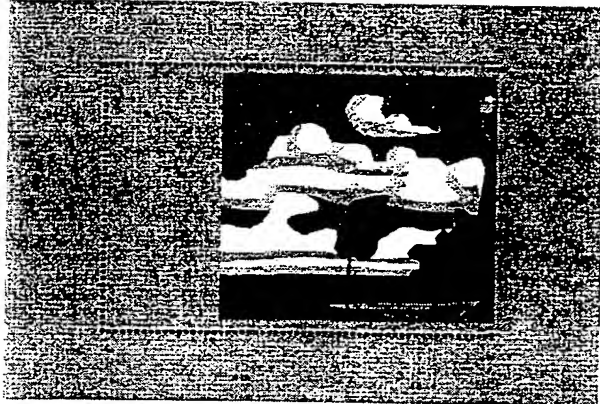
Initial View

HMD's Field of View(dashed line)**Camera's Field of View (edge of image)****Fig. 4b**Displayed Image
as Head Turned
to the Left

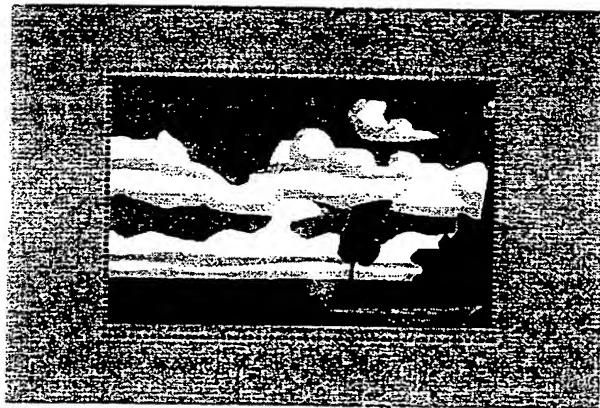
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Fig. 4c

Displayed Image with
Camera Catching Up

**Fig. 4d**

Displayed Image
with Camera
Caught Up



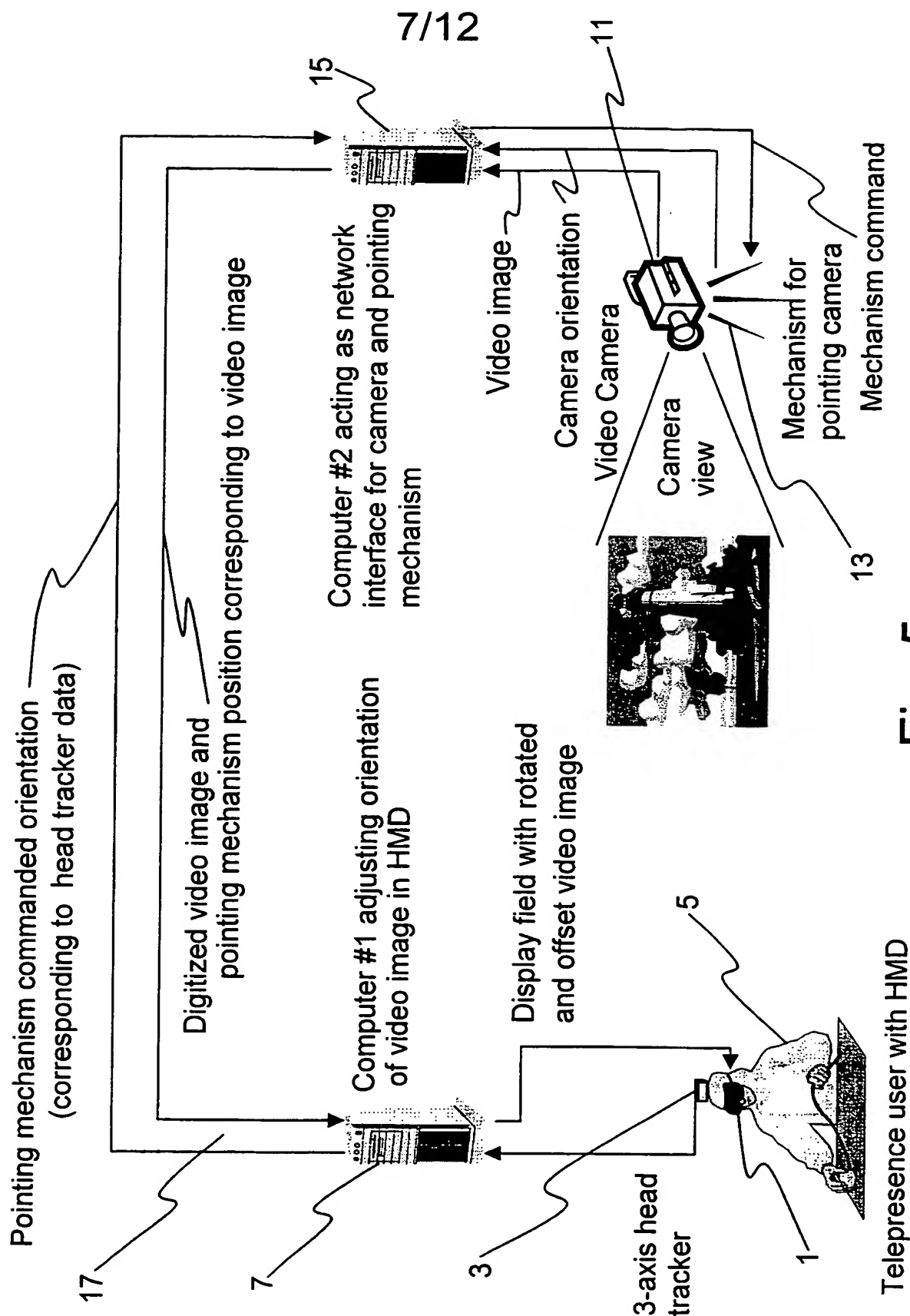


Fig. 5

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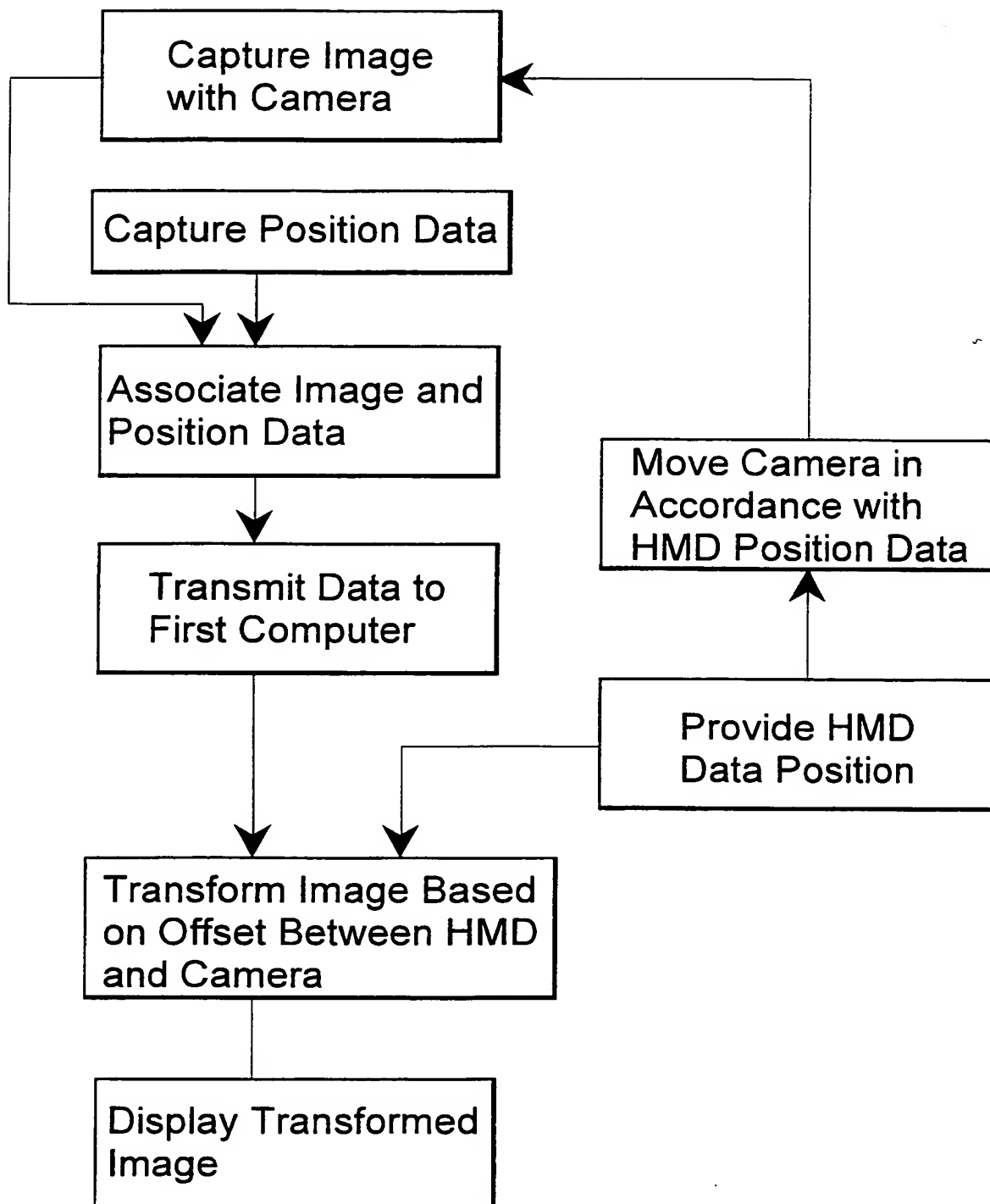


Fig. 6

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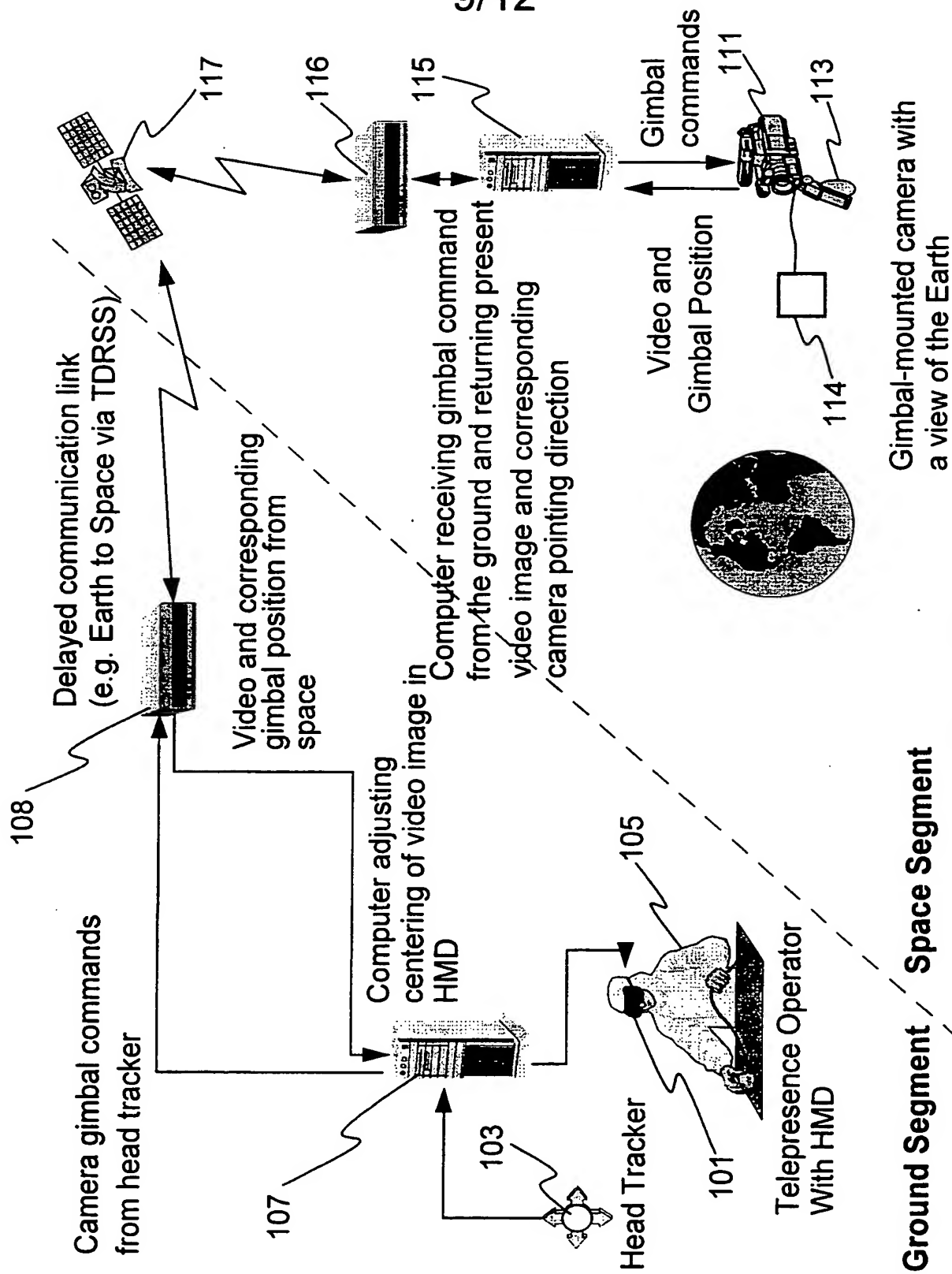


Fig. 7

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HMD's Field of View(dashed line)

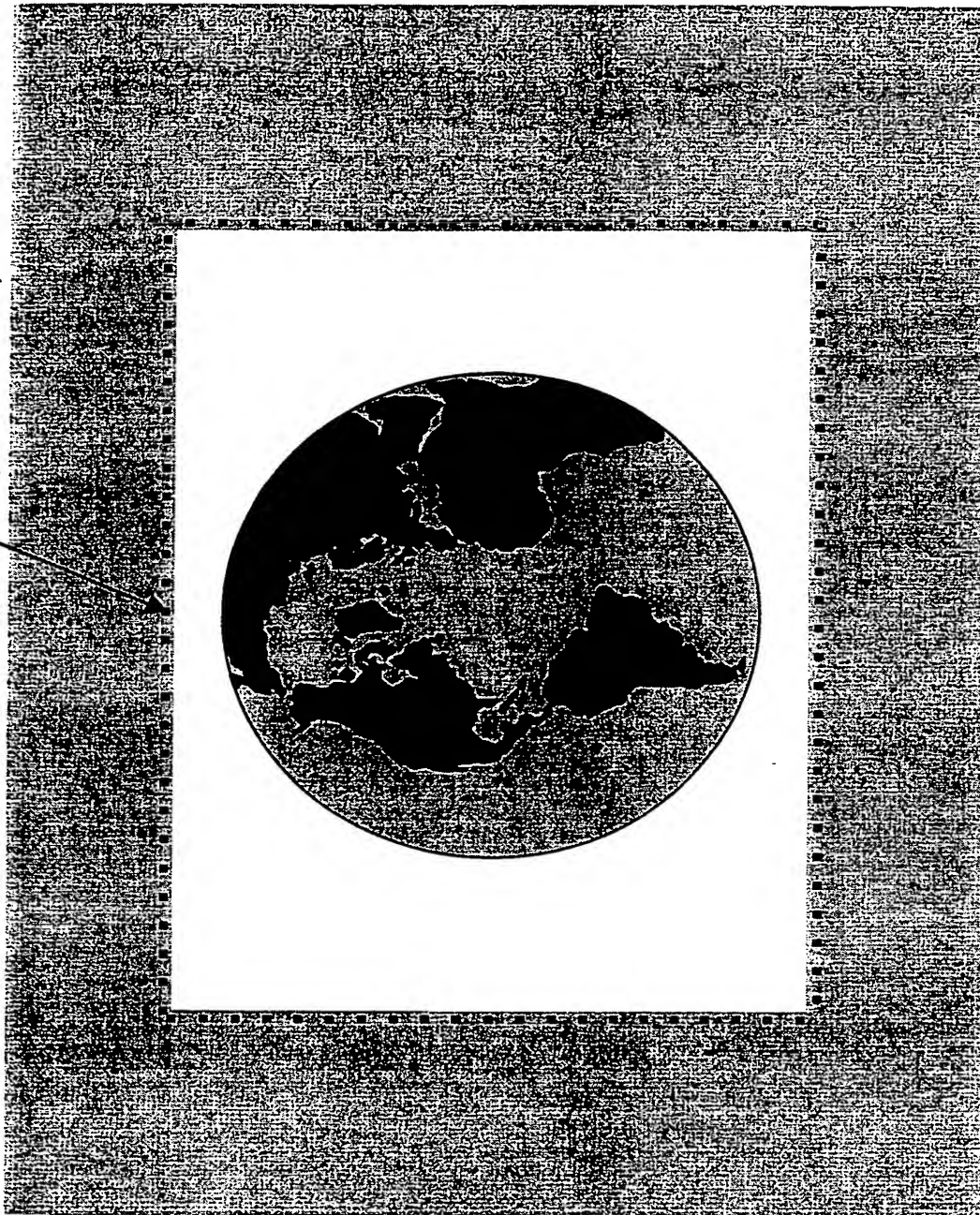


Fig. 8

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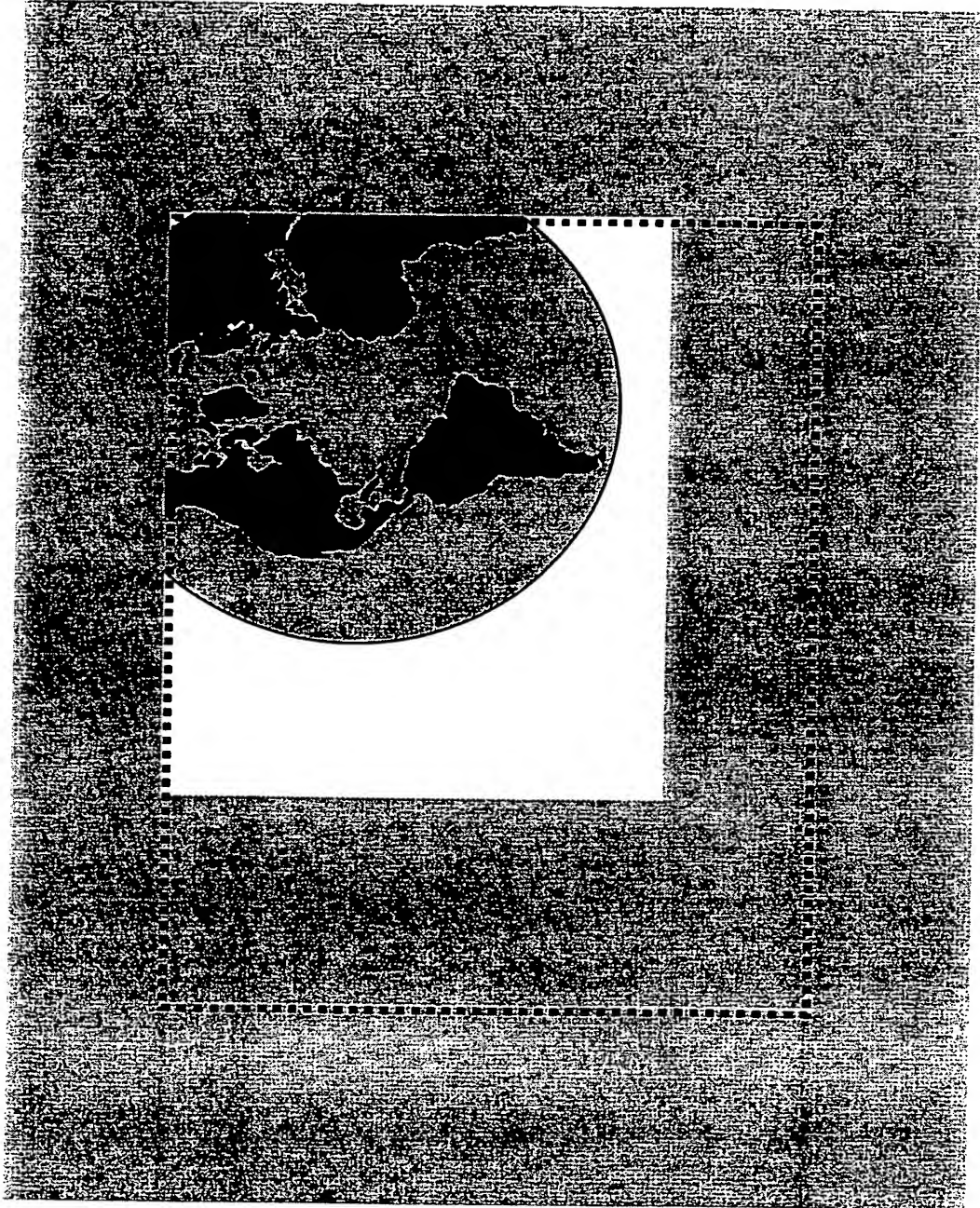


Fig. 9

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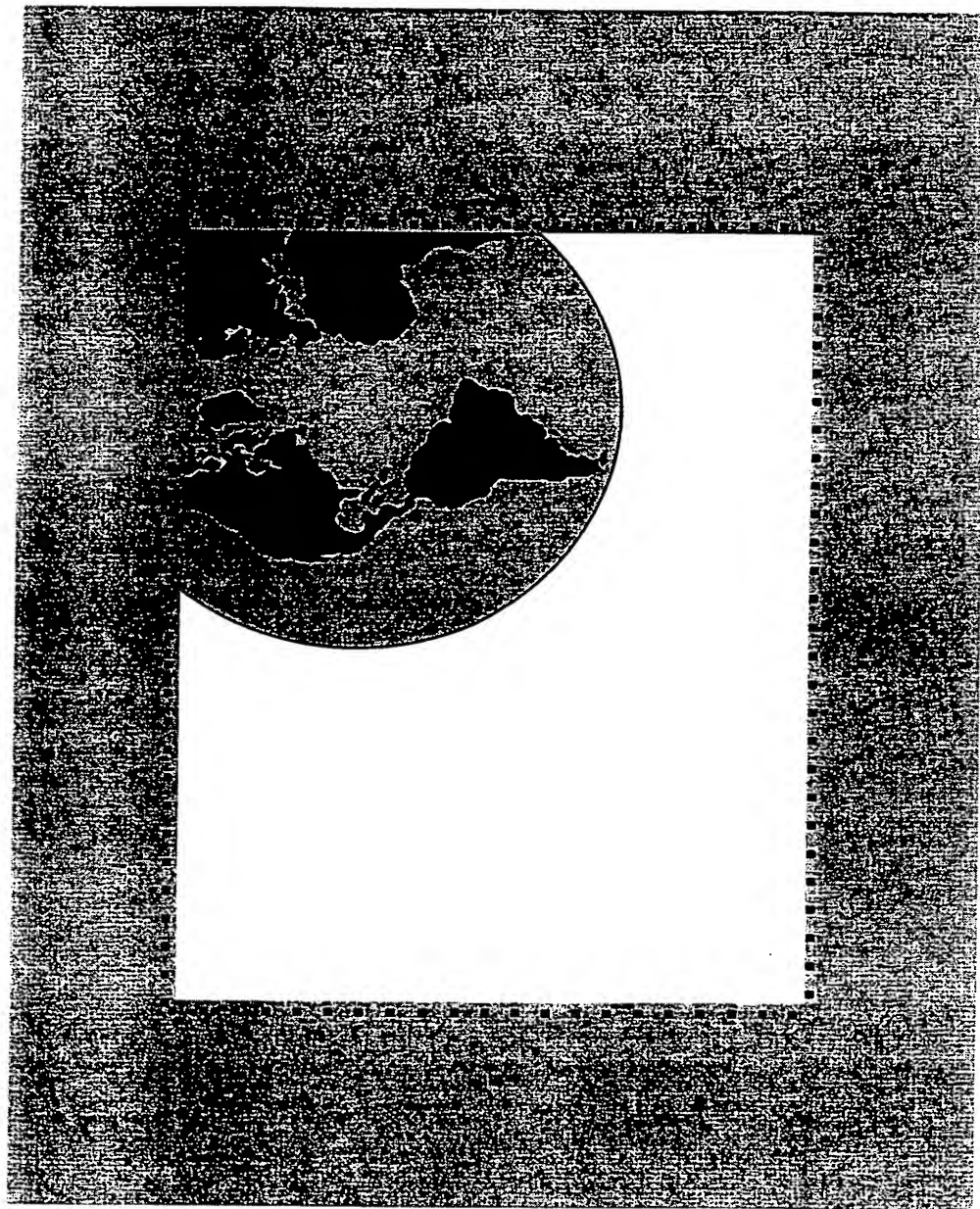


Fig. 10

INTERNATIONAL SEARCH REPORT

Intern: al Application No

PCT/CA 00/01063

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G02B27/01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 347 508 A (SPOONER) 31 August 1982 (1982-08-31) abstract; figure 1	1, 18
A	column 3, line 42 - line 54	2, 5, 8, 9, 11, 14, 21
Y	EP 0 537 945 A (BRITISH AEROSPACE) 21 April 1993 (1993-04-21) column 5, line 48 - line 57	1, 18
A		7-16
A	US 5 610 678 A (TSUBOI) 11 March 1997 (1997-03-11) column 10, line 41 - line 42 column 13, line 40 - line 44; figure 13	17, 19
	--- -/-- ---	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

24 January 2001

Date of mailing of the international search report

31/01/2001

Name and mailing address of the ISA

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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Soulaire, D

INTERNATIONAL SEARCH REPORT

Intern: al Application No
PCT/CA 00/01063

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FISHER R W: "Variable acuity remote viewing system (VARVS)" PROCEEDINGS OF THE IEEE 1978 NATIONAL AEROSPACE AND ELECTRONICS CONFERENCE NAECON 78, DAYTON, OH, USA, 16-18 MAY 1978, pages 1172-1179, XP002016920 1978, New York, NY, USA, IEEE, USA page 1172, column 2 - page 1174, column 1 : "THE VARVS CONCEPT"</p> <p style="text-align: center;">----</p>	22
A	<p>US 5 579 026 A (TABATA) 26 November 1996 (1996-11-26) cited in the application abstract</p> <p style="text-align: center;">----</p>	
A	<p>US 5 917 460 A (KODAMA) 29 June 1999 (1999-06-29) cited in the application column 2, line 60 - column 3, line 14 column 8, line 30 - line 34</p> <p style="text-align: center;">----</p>	
A	<p>US 5 933 125 A (FERNIE) 3 August 1999 (1999-08-03) cited in the application column 1, line 18 - line 22 column 2, line 10 - line 15</p> <p style="text-align: center;">-----</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: al Application No

PCT/CA 00/01063

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 4347508	A	31-08-1982	CA	1121590 A	13-04-1982
			GB	2041562 A,B	10-09-1980
			GB	2115178 A,B	01-09-1983
			GB	2115179 A,B	01-09-1983
EP 537945	A	21-04-1993	JP	5324800 A	07-12-1993
			US	5394517 A	28-02-1995
US 5610678	A	11-03-1997	JP	7199280 A	04-08-1995
			JP	7199281 A	04-08-1995
US 5579026	A	26-11-1996	JP	6326944 A	25-11-1994
			JP	7298165 A	10-11-1995
			US	5781165 A	14-07-1998
US 5917460	A	29-06-1999	JP	8021975 A	23-01-1996
US 5933125	A	03-08-1999	AU	7616496 A	19-06-1997
			CA	2238693 A	05-06-1997
			WO	9720244 A	05-06-1997

REC'D 08 AUG 2001

WIPO

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 50412-1 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/CA00/01063	International filing date (day/month/year) 22/09/2000	Priority date (day/month/year) 22/09/1999
International Patent Classification (IPC) or national classification and IPC G02B27/01		
Applicant CANADIAN SPACE AGENCY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 19/04/2001	Date of completion of this report 06.08.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Artelsmair, G Telephone No. +49 89 2399 8989 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA00/01063

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-13 as originally filed

Claims, No.:

1-22 as originally filed

Drawings, sheets:

1-12 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA00/01063

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-22
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-22
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-22
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

1 Regarding item V:

Independent claims 1 and 18 are not clear and lack essential features. The following remarks are made under the provision that these objections are overcome, see item VIII.

1.1 The application relates to motion compensation in telepresence systems.

US-A-4347508 (D1) describes a head-mounted display (HMD) system comprising a sensor for providing HMD position data relating to a position of the head mounted display, and a processor for transforming the image to vary a displayed location of static objects within the image field of view. The images in the system according to D1 are computer generated and thus no camera is provided.

EP-A-0537945 (D2) describes a system comprising a head-mounted display, a camera for capturing images whereby the camera position is controlled by signals derived from a position sensor on the users helmet.

The other documents cited in the International Search Report either relate to the subject-matter of dependent claims or to the general technological background.

1.2 The problem underlying the present invention is that a remote camera of a telepresence system does not move exactly in synchronisation with the HMD and thus the image is not perfectly aligned. According to the present invention this problem is solved by providing camera position data relating to a position of the camera when the associated image is captured, determining an offset between the HMD-position data and the camera position data, and offsetting the displayed image according to the determined offset.

The cited documents, for example D2 describe that the position of the camera is controlled by the HMD and that an image signal is feedback to the display. However, non of the cited documents describes to provide camera position data associated with the captured picture and compensating the motion of the HMD according to an offset between the camera position data and the HMD position data.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/01063

2 Regarding item VIII:

- 2.1 In claims 1 and 18 first an image capture device and then "the camera" is mentioned. It should be made clear that the camera is the image capturing device.
- 2.2 The wording of the last paragraph of claim 1 is unclear.
- 2.3 It is clear from the description that the claimed system is a telepresence system. Thus the following features are essential to the definition of the invention:

The system is a telepresence system;
the camera is slaved by the HMD;
the compensation is provided by calculating an offset between the camera position data and the HMD position data.

Since independent claims 1 and 18 do not contain these features they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 50412-1 PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CA 00/ 01063	International filing date (day/month/year) 22/09/2000	(Earliest) Priority Date (day/month/year) 22/09/1999
Applicant CANADIAN SPACE AGENCY et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

National Application No

PCT/CA 00/01063

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G02B27/01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 347 508 A (SPOONER) 31 August 1982 (1982-08-31) abstract; figure 1	1, 18
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A	US 5 610 678 A (TSUBOI) 11 March 1997 (1997-03-11) column 10, line 41 - line 42 column 13, line 40 - line 44; figure 13	17, 19
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

24 January 2001

Date of mailing of the international search report

31/01/2001

Name and mailing address of the ISA

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Fax: (+31-70) 340-3016

Authorized officer

Soulaire, D

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 00/01063

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FISHER R W: "Variable acuity remote viewing system (VARVS)" PROCEEDINGS OF THE IEEE 1978 NATIONAL AEROSPACE AND ELECTRONICS CONFERENCE NAECON 78, DAYTON, OH, USA, 16-18 MAY 1978, pages 1172-1179, XP002016920 1978, New York, NY, USA, IEEE, USA page 1172, column 2 - page 1174, column 1 : "THE VARVS CONCEPT" ----</p>	22
A	<p>US 5 579 026 A (TABATA) 26 November 1996 (1996-11-26) cited in the application abstract ----</p>	
A	<p>US 5 917 460 A (KODAMA) 29 June 1999 (1999-06-29) cited in the application column 2, line 60 -column 3, line 14 column 8, line 30 - line 34 ----</p>	
A	<p>US 5 933 125 A (FERNIE) 3 August 1999 (1999-08-03) cited in the application column 1, line 18 - line 22 column 2, line 10 - line 15 -----</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 00/01063

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4347508	A	31-08-1982	CA 1121590 A	13-04-1982
			GB 2041562 A, B	10-09-1980
			GB 2115178 A, B	01-09-1983
			GB 2115179 A, B	01-09-1983
EP 537945	A	21-04-1993	JP 5324800 A	07-12-1993
			US 5394517 A	28-02-1995
US 5610678	A	11-03-1997	JP 7199280 A	04-08-1995
			JP 7199281 A	04-08-1995
US 5579026	A	26-11-1996	JP 6326944 A	25-11-1994
			JP 7298165 A	10-11-1995
			US 5781165 A	14-07-1998
US 5917460	A	29-06-1999	JP 8021975 A	23-01-1996
US 5933125	A	03-08-1999	AU 7616496 A	19-06-1997
			CA 2238693 A	05-06-1997
			WO 9720244 A	05-06-1997